Agency for Healthcare Research and Quality
Advancing Excellence in Health Care

NATIONAL QUALITY MEASURES CLEARINGHOUSE

General

Title

Adult obstructive sleep apnea (OSA): proportion of patients aged 18 years and older with a diagnosis of OSA who had an apnea-hypopnea index (AHI), a respiratory disturbance index (RDI), or respiratory event index (REI) documented or measured within 2 months of initial evaluation for suspected OSA.

Source(s)

Aurora RN, Collop NA, Jacobowitz O, Thomas SM, Quan SF, Aronsky AJ. Quality measures for the care of adult patients with obstructive sleep apnea. J Clin Sleep Med. 2015 Mar 15;11(3):357-83. PubMed

Measure Domain

Primary Measure Domain

Clinical Quality Measures: Process

Secondary Measure Domain

Does not apply to this measure

Brief Abstract

Description

This measure is used to assess the proportion of patients aged 18 years and older with a diagnosis of obstructive sleep apnea (OSA) who had an apnea-hypopnea index (AHI), a respiratory disturbance index (RDI), or respiratory event index (REI) documented or measured within 2 months of initial evaluation for suspected OSA.

Rationale

Expeditious diagnosis and treatment of obstructive sleep apnea (OSA) are important in reducing the burden associated with OSA-related comorbidities. However, history and physical exam alone are not sufficient to diagnose OSA. Objective testing with either in-laboratory polysomnography or home sleep apnea testing is necessary and required for the diagnosis of OSA and classification of disease severity (Kushida et al., 2005; Epstein et al., 2009; Gay et al., 2006). Determining OSA severity is important

given that patients with moderate or severe OSA are at higher risk for cardiovascular diseases, neurocognitive dysfunction, lower quality of life, and other comorbid conditions (Lurie, 2011; Beebe et al., 2003; Qaseem et al., 2013). Thus, physicians evaluating patients with suspected sleep apnea should try to establish the patient's level of OSA severity in an expeditious manner as early case identification is important in prompt initiation of treatment and reduction of OSA-associated comorbidities.

Evidence for Rationale

Aurora RN, Collop NA, Jacobowitz O, Thomas SM, Quan SF, Aronsky AJ. Quality measures for the care of adult patients with obstructive sleep apnea. J Clin Sleep Med. 2015 Mar 15;11(3):357-83. PubMed

Beebe DW, Groesz L, Wells C, Nichols A, McGee K. The neuropsychological effects of obstructive sleep apnea: a meta-analysis of norm-referenced and case-controlled data. Sleep. 2003 May 1;26(3):298-307. PubMed

Epstein LJ, Kristo D, Strollo PJ Jr, Friedman N, Malhotra A, Patil SP, Ramar K, Rogers R, Schwab RJ, Weaver EM, Weinstein MD, Adult Obstructive Sleep Apnea Task Force of the American Academy of Sleep Medicine. Clinical guideline for the evaluation, management and long-term care of obstructive sleep apnea in adults. J Clin Sleep Med. 2009 Jun 15;5(3):263-76. PubMed

Gay P, Weaver T, Loube D, Iber C, Positive Airway Pressure Task Force, Standards of Practice Committee, American Academy of Sleep Medicine. Evaluation of positive airway pressure treatment for sleep related breathing disorders in adults. Sleep. 2006 Mar 1;29(3):381-401. [167 references] PubMed

Kushida CA, Littner MR, Morgenthaler T, Alessi CA, Bailey D, Coleman J Jr, Friedman L, Hirshkowitz M, Kapen S, Kramer M, Lee-Chiong T, Loube DL, Owens J, Pancer JP, Wise M. Practice parameters for the indications for polysomnography and related procedures: an update for 2005. Sleep. 2005 Apr 1;28(4):499-521. [150 references] PubMed

Lurie A. Cardiovascular disorders associated with obstructive sleep apnea. Adv Cardiol. 2011;46:197-266. PubMed

Qaseem A, Holty JE, Owens DK, Dallas P, Starkey M, Shekelle P, for the Clinical Guidelines Committee of the American College of Physicians. Management of obstructive sleep apnea in adults: a clinical practice guideline from the American College of Physicians. Ann Intern Med. 2013 Oct 1;159(7):471-83. [198 references] PubMed

Primary Health Components

Obstructive sleep apnea (OSA); severity assessment; apnea-hypopnea index (AHI); respiratory disturbance index (RDI); respiratory event index (REI)

Denominator Description

All patients aged 18 years and older diagnosed with obstructive sleep apnea (OSA) (see the related "Denominator Inclusions/Exclusions" field)

Numerator Description

Number of patients who had an apnea-hypopnea index (AHI), a respiratory disturbance index (RDI), or respiratory event index (REI) documented or measured within 2 months of initial evaluation for suspected obstructive sleep apnea (OSA) (see related "Numerator Inclusions/Exclusions" field)

Evidence Supporting the Measure

Type of Evidence Supporting the Criterion of Quality for the Measure

A clinical practice guideline or other peer-reviewed synthesis of the clinical research evidence

A formal consensus procedure, involving experts in relevant clinical, methodological, public health and organizational sciences

A systematic review of the clinical research literature (e.g., Cochrane Review)

One or more research studies published in a National Library of Medicine (NLM) indexed, peer-reviewed journal

Additional Information Supporting Need for the Measure

- Obstructive sleep apnea (OSA) is one of the most prevalent sleep disorders, affecting approximately to 3% to 7% of men and 2% to 5% of women in the general population (Punjabi, 2008; Stradling & Davies, 2004; Young et al., 1993; Young, Peppard, & Gottlieb, 2002). When polysomnographic criteria alone are considered, the prevalence rate increases dramatically to 24% in men and 9% in women (Young et al., 1993). Despite the fact that OSA is a common disease, it remains considerably underdiagnosed, with 75% to 80% of cases remaining unidentified (Kapur et al., 2002; Young, Skatrud, & Peppard, 2004).
- The implications of untreated OSA are significant from the individual patient, healthcare, and economic perspectives. For the affected individual, OSA is associated with a number of nocturnal symptoms, as well as with difficulty in daytime functioning secondary to daytime sleepiness, irritability, fatigue, and decreased cognitive functioning (Punjabi, 2008). In fact, untreated OSA has been shown to significantly reduce quality of life (Baldwin et al., 2001; Lopes et al., 2008). Furthermore, untreated OSA (especially severe OSA) is associated with a multitude of adverse health outcomes including cardiovascular disease (Lurie, 2011), disorders of glucose metabolism including insulin resistance and diabetes (Aurora & Punjabi, 2013; Gharibeh & Mehra, 2010), stroke (Redline et al., 2010), and an increased risk of death (Punjabi et al., 2009). Another compelling motivation for early case identification and treatment of OSA is the higher prevalence of traffic accidents noted in persons with untreated OSA (Horstmann et al., 2000; Sassani et al., 2004; Teran-Santos, Jimenez-Gomez, & Cordero-Guevara, 1999). From an economic perspective, the healthcare costs and resource utilization of undiagnosed OSA is staggering, running into billions of dollars per year (Alghanim et al., 2008; The Harvard Medical School Division of Sleep Medicine, 2010), similar to other chronic disorders. The financial burden of OSA-related motor vehicle crashes alone is enormous. Furthermore, therapy for OSA seems to reduce comorbidities associated with OSA as well as healthcare costs and utilization (Albarrak et al., 2005; Banno et al., 2006).

Evidence for Additional Information Supporting Need for the Measure

Albarrak M, Banno K, Sabbagh AA, Delaive K, Walld R, Manfreda J, Kryger MH. Utilization of healthcare resources in obstructive sleep apnea syndrome: a 5-year follow-up study in men using CPAP. Sleep. 2005 Oct;28(10):1306-11. PubMed

Alghanim N, Comondore VR, Fleetham J, Marra CA, Ayas NT. The economic impact of obstructive sleep apnea. Lung. February 2008;186(1):7-12. [49 references]

Aurora RN, Collop NA, Jacobowitz O, Thomas SM, Quan SF, Aronsky AJ. Quality measures for the care of adult patients with obstructive sleep apnea. J Clin Sleep Med. 2015 Mar 15;11(3):357-83. PubMed

Aurora RN, Punjabi NM. Obstructive sleep apnoea and type 2 diabetes mellitus: a bidirectional association. Lancet Respir Med. 2013 Jun;1(4):329-38. PubMed

Baldwin CM, Griffith KA, Nieto FJ, O'Connor GT, Walsleben JA, Redline S. The association of sleep-disordered breathing and sleep symptoms with quality of life in the Sleep Heart Health Study. Sleep. 2001 Feb 1;24(1):96-105. PubMed

Banno K, Manfreda J, Walld R, Delaive K, Kryger MH. Healthcare utilization in women with obstructive sleep apnea syndrome 2 years after diagnosis and treatment. Sleep. 2006 Oct;29(10):1307-11. PubMed

Gharibeh T, Mehra R. Obstructive sleep apnea syndrome: natural history, diagnosis, and emerging treatment options. Nat Sci Sleep. 2010;2:233-55. PubMed

Horstmann S, Hess CW, Bassetti C, Gugger M, Mathis J. Sleepiness-related accidents in sleep apnea patients. Sleep. 2000 May 1;23(3):383-9. PubMed

Kapur V, Strohl KP, Redline S, Iber C, O'Connor G, Nieto J. Underdiagnosis of sleep apnea syndrome in U.S. communities. Sleep Breath. 2002 Jun;6(2):49-54. PubMed

Lopes C, Esteves AM, Bittencourt LR, Tufik S, Mello MT. Relationship between the quality of life and the severity of obstructive sleep apnea syndrome. Braz J Med Biol Res. 2008 Oct;41(10):908-13. PubMed

Lurie A. Cardiovascular disorders associated with obstructive sleep apnea. Adv Cardiol. 2011;46:197-266. PubMed

Punjabi NM, Caffo BS, Goodwin JL, Gottlieb DJ, Newman AB, O'Connor GT, Rapoport DM, Redline S, Resnick HE, Robbins JA, Shahar E, Unruh ML, Samet JM. Sleep-disordered breathing and mortality: a prospective cohort study. PLoS Med. 2009 Aug;6(8):e1000132. PubMed

Punjabi NM. The epidemiology of adult obstructive sleep apnea. Proc Am Thorac Soc. 2008 Feb 15;5(2):136-43. PubMed

Redline S, Yenokyan G, Gottlieb DJ, Shahar E, O'Connor GT, Resnick HE, Diener-West M, Sanders MH, Wolf PA, Geraghty EM, Ali T, Lebowitz M, Punjabi NM. Obstructive sleep apnea-hypopnea and incident stroke: the sleep heart health study. Am J Respir Crit Care Med. 2010 Jul 15;182(2):269-77. PubMed

Sassani A, Findley LJ, Kryger M, Goldlust E, George C, Davidson TM. Reducing motor-vehicle collisions, costs, and fatalities by treating obstructive sleep apnea syndrome. Sleep. 2004 May 1;27(3):453-8. PubMed

Stradling JR, Davies RJ. Sleep. 1: Obstructive sleep apnoea/hypopnoea syndrome: definitions, epidemiology, and natural history. Thorax. 2004 Jan;59(1):73-8. PubMed

Teran-Santos J, Jimenez-Gomez A, Cordero-Guevara J. The association between sleep apnea and the risk of traffic accidents. Cooperative Group Burgos-Santander. N Engl J Med. 1999 Mar 18;340(11):847-51. PubMed

The Harvard Medical School Division of Sleep Medicine. The price of fatigue: the surprising economic costs of unmanaged sleep apnea. [internet]. 2010 [accessed 2014 Aug 08].

Young T, Palta M, Dempsey J, Skatrud J, Weber S, Badr S. The occurrence of sleep-disordered breathing among middle-aged adults. N Engl J Med. 1993 Apr 29;328(17):1230-5. PubMed

Young T, Peppard PE, Gottlieb DJ. Epidemiology of obstructive sleep apnea: a population health perspective. Am J Respir Crit Care Med. 2002 May 1;165(9):1217-39.

Young T, Skatrud J, Peppard PE. Risk factors for obstructive sleep apnea in adults. JAMA. 2004 Apr 28;291(16):2013-6. PubMed

Extent of Measure Testing

Unspecified

State of Use of the Measure

State of Use

Current routine use

Current Use

not defined yet

Application of the Measure in its Current Use

Measurement Setting

Ambulatory/Office-based Care

Professionals Involved in Delivery of Health Services

not defined yet

Least Aggregated Level of Services Delivery Addressed

Individual Clinicians or Public Health Professionals

Statement of Acceptable Minimum Sample Size

Does not apply to this measure

Target Population Age

Age greater than or equal to 18 years

Target Population Gender

Either male or female

National Strategy for Quality Improvement in Health Care

National Quality Strategy Aim

Better Care

National Quality Strategy Priority

Prevention and Treatment of Leading Causes of Mortality

Institute of Medicine (IOM) National Health Care Quality Report Categories

IOM Care Need

Living with Illness

IOM Domain

Effectiveness

Data Collection for the Measure

Case Finding Period

Unspecified

Denominator Sampling Frame

Patients associated with provider

Denominator (Index) Event or Characteristic

Clinical Condition

Patient/Individual (Consumer) Characteristic

Denominator Time Window

not defined yet

Denominator Inclusions/Exclusions

Inclusions
All patients aged 18 years and older with a diagnosis of obstructive sleep apnea (OSA)

Note: Refer to the original measure documentation for administrative codes.

Exclusions
Unspecified

Exceptions

> *Medical Reasons*: Patients with a medical, neurological, or psychiatric disease that prohibits successful completion of a sleep study; patients in whom a sleep study would present a bigger risk than benefit or pose an undue burden should not be included in the eligible population.
> *Patient Reasons*: Patients who declined apnea-hypopnea index (AHI)/respiratory disturbance index (RDI)/respiratory event index (REI) measurement; patients who have financial reasons for not completing testing.
> *System Reasons*: Test was ordered but not completed; Patients who decline because their insurance (payer) does not cover the expense.

Exclusions/Exceptions

not defined yet

Numerator Inclusions/Exclusions

Inclusions
Number of patients who had an apnea-hypopnea index (AHI), a respiratory disturbance index (RDI), or respiratory event index (REI) documented or measured within 2 months of initial evaluation for suspected obstructive sleep apnea (OSA)

Note:

> Apnea-hypopnea index (AHI) for polysomnography performed in a sleep lab is defined as (total apneas + hypopneas per hour of sleep).
> Respiratory disturbance index (RDI) is defined as (total apneas + hypopneas + respiratory-effort-related arousals per hour of sleep).
> Respiratory event index (REI) is a measure of respiratory events per unit of time for home sleep apnea testing. It should be noted that the REI may underestimate the true event index. In light of the limited number of channels utilized for home sleep apnea testing, the REI may underestimate the severity of OSA or fail to capture the diagnosis.

Exclusions
Unspecified

Numerator Search Strategy

Encounter

Data Source

Administrative clinical data

Electronic health/medical record

Paper medical record

Type of Health State

Does not apply to this measure

Instruments Used and/or Associated with the Measure

- Apnea-hypopnea index (AHI)
- Respiratory disturbance index (RDI)
- Respiratory event index (REI)

Computation of the Measure

Measure Specifies Disaggregation

Does not apply to this measure

Scoring

Rate/Proportion

Interpretation of Score

Desired value is a higher score

Allowance for Patient or Population Factors

not defined yet

Standard of Comparison

not defined yet

Identifying Information

Original Title

Process measure #2: severity assessment at initial diagnosis.

Measure Collection Name

Adult Obstructive Sleep Apnea

Submitter

American Academy of Sleep Medicine - Medical Specialty Society

Developer

American Academy of Sleep Medicine - Medical Specialty Society

Funding Source(s)

American Academy of Sleep Medicine

Composition of the Group that Developed the Measure

R. Nisha Aurora, MD (Johns Hopkins University, School of Medicine, Baltimore, MD); Nancy A. Collop, MD (Emory Sleep Center, Atlanta, GA); Ofer Jacobowitz, MD, PhD (ENT and Allergy Associates and Mount Sinai Hospital, New York, NY); Sherene M. Thomas, PhD (American Academy of Sleep Medicine, Darien, IL); Stuart F. Quan, MD (Division of Sleep Medicine, Harvard Medical School, Boston, MA; Division of Sleep and Circadian Disorders, Brigham and Women's Hospital, Boston, MA; Arizona Respiratory Center, University of Arizona College of Medicine, Tucson, AZ); Amy J. Aronsky, DO (CareCentrix, Hartford, CT)

Financial Disclosures/Other Potential Conflicts of Interest

This was not an industry supported study. Dr. Collop is Editor-In-Chief of the *Journal of Clinical Sleep Medicine* and has received royalties from UpToDate. Dr. Jacobowitz has received research support from ImThera Medical Research. Dr. Thomas is an employee of the American Academy of Sleep Medicine. Dr. Quan is Editor Emeritus of the *Journal of Clinical Sleep Medicine* and has consulted for GCC (Global Corporate Challenge). Dr. Aronsky is employed by CareCentrix, Inc., a benefit management company and is a past member of the American Academy of Sleep Medicine Board of Directors. The other authors have indicated no financial conflicts of interest.

Measure Initiative(s)

Physician Quality Reporting System

Adaptation

This measure was not adapted from another source.

Date of Most Current Version in NQMC

2015 Mar

Measure Maintenance

Unspecified

Date of Next Anticipated Revision

Unspecified

Measure Status

This is the current release of the measure.

This measure updates a previous version: American Academy of Sleep Medicine (AASM), Physician Consortium for Performance Improvement®, National Committee for Quality Assurance (NCQA). Obstructive sleep apnea physician performance measurement set. Chicago (IL): American Medical Association (AMA); 2008 Sep 26. 21 p.

Measure Availability

Source not available electronically.

For more information, contact the American Academy of Sleep Medicine (AASM) at 2510 North Frontage Road, Darien, IL 60561; Phone: 630-737-9700; Fax: 630-737-9790; E-mail: webmaster@aasmnet.org; Web site: www.aasmnet.org/ .

NQMC Status

This NQMC summary was completed by ECRI Institute on April 13, 2009. The information was verified by the measure developer on April 1, 2010.

This NQMC summary was retrofitted into the new template on June 7, 2011.

Stewardship for this measure was transferred from the PCPI to the American Academy of Sleep Medicine. The American Academy of Sleep Medicine informed NQMC that this measure was updated. This NQMC summary was updated by ECRI Institute on October 26, 2015. The information was verified by the measure developer on November 13, 2015.

Copyright Statement

Production

Source(s)

Aurora RN, Collop NA, Jacobowitz O, Thomas SM, Quan SF, Aronsky AJ. Quality measures for the care of adult patients with obstructive sleep apnea. J Clin Sleep Med. 2015 Mar 15;11(3):357-83. PubMed

Disclaimer

NQMC Disclaimer

NQMC, AHRQ, and its contractor ECRI Institute make no warranties concerning the content or its reliability and/or validity of the quality measures and related materials represented on this site. Moreover, the views and opinions of developers or authors of measures represented on this site do not necessarily state or reflect those of NQMC, AHRQ, or its contractor, ECRI Institute, and inclusion or hosting of measures in NQMC may not be used for advertising or commercial endorsement purposes.

Readers with questions regarding measure content are directed to contact the measure developer.